



Air Quality Permitting
Statement of Basis

May 24, 2006

Tier I Operating Permit No. T1-030314

Williams Gas Pipeline, Northwest Pipeline Corporation
Soda Springs

Facility ID No. 007-00008

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FINAL PERMIT

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Acronyms, Units, and Chemical Nomenclature

2SLB	Two-stroke lean-burn
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
Bbl	barrels
Btu/hr	British thermal unit per hour
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
FIRE	Factor Information Retrieval
HAPs	hazardous air pollutants
hp	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
m³	cubic meters
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
NWP	Northwest Pipeline Corporation
PM	Particulate matter
PM₁₀	Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
RICE	reciprocating internal combustion engine
SIC	Standard Industrial Classification
SO₂	sulfur dioxide
T/yr	tons per year
TAPs	toxic air pollutants
VOC	volatile organic compound

1. PURPOSE

The purpose of this memorandum is to explain the legal and factual basis for this proposed Tier I operating permit in accordance with IDAPA 58.01.01.362.

DEQ has reviewed the information provided by Williams Gas Pipeline, Northwest Pipeline (NWP) regarding the operation of the Compressor Station located near Soda Springs. This information was submitted based on the requirements to submit a Tier I operating permit application in accordance with IDAPA 58.01.01.313.

2. FACILITY DESCRIPTION

The Soda Springs Compressor Station operates remotely from NWP's headquarters, located in Salt Lake City, and is used to compress and transmit natural gas along their natural gas transmission pipeline. The station is operated to meet the demand of the pipeline system rather than a fixed schedule. The arrangement of pipes and valves in the Soda Springs pipe yard allows natural gas to be transmitted in either direction.

Natural gas entering the station passes through an in-line filter that removes impurities from the gas stream. The natural gas is compressed through the compressor and is returned to the transmission pipeline. Four reciprocating internal-combustion engines, which the permittee refers to as Unit 1, Unit 2, Unit 3, and Unit 4, drive the compressors. Fuel for the reciprocating engines and other natural gas combustion equipment enters the station in separate piping that originates in the pipe yard downstream of the filter. Fuel gas is lowered from mainline pressures (to pressures appropriate for the reciprocating engines) in the fuel meter building. From the fuel meter building, natural gas is piped to the reciprocating engines, the boiler, space heaters, and the backup generator. The reciprocating engines, boiler, backup generator, and space heaters have their own exhaust stacks.

3. FACILITY / AREA CLASSIFICATION

This facility emits or has the potential to emit a regulated criteria air pollutant in amounts greater than or equal to 100 tons per year (T/yr); therefore, it is a major facility as defined by IDAPA 58.01.01.008.10. This facility is considered major for hazardous air pollutants (HAPs) emissions because the facility has a potential to emit a single HAP in amounts greater than 10 T/yr and a combination of HAPs in amounts greater than 25 T/yr.

The facility is a major facility for the purposes of the federal prevention of significant deterioration (PSD) program as referenced by IDAPA 58.01.01.205 because the facility emits or has the potential to emit a regulated criteria air pollutant in amounts greater than or equal to the major threshold criteria of 250 T/yr.

This facility is not a designated facility as defined by IDAPA 58.01.01.006.27.

The Standard Industrial Code (SIC) defining this facility is 4922, and the Aerometric Information Retrieval System (AIRS) facility classification is A. Details of the AIRS facility-wide classification are in Appendix A.

The facility is located in Bear Lake County, which is located in Air Quality Control Region (AQCR) No. 61. This area is unclassifiable for all federal and state criteria pollutants. There are no Class I areas within 10 kilometers (km) of the facility.

4. APPLICATION SCOPE

On June 25, 2003, DEQ received an application from NWP for the renewal of their Tier I Operating Permit for the operation of their Soda Springs natural gas compressor station. The permittee did not request any permit changes in their June 2003 application.

On May 13, 2004, DEQ received a letter from NWP as a supplement to the June 2003 application. The permittee requested the following changes to their Tier I Operating Permit:

The permittee requested Permit Condition 2.2 of Tier I Operating Permit No. 007-00008, March 6, 2003, be amended to require the permittee to record total annual fuel usage for each engine rather than record monthly fuel usage for each engine.

The permittee requested Permit Condition 2.1 and 2.5 of Tier I Operating Permit No. 007-00008, March 6, 2003, be deleted.

The permit changes that have been requested by NWP are discussed in more detail in the Regulatory Analysis section of this memorandum.

5. SUMMARY OF EVENTS

On June 25, 2003, DEQ received an application for the renewal of NWP's Tier I operating permit. On August 6, 2003, DEQ determined the application to be complete. On May 13, 2004, and March 30, 2006, DEQ received correspondences from NWP as supplements to the June 2003 application.

Permitting History

January 3, 2001	DEQ issued Tier I Operating Permit No. 039-00022 to NWP for their Soda Springs facility.
March 6, 2003	DEQ issued Tier I Operating Permit No. T1-020058. The permit was an administrative permit amendment to the January 2001 operating permit to reflect a change of responsible official to Gordon Hamilton.

6. PERMIT ANALYSIS

Basis of the Analysis

The following documents were relied upon in preparing this memorandum and the Tier I operating permit:

- Compliance certifications received on January 26, 2006, January 6, 2005, and February 2, 2004;
- Tier I operating permit application, received June 25, 2003;
- Tier I Operating Permit No. 007-00008, issued March 6, 2003;
- A performance test report for emissions tests conducted on October 3, 2001;
- A performance test report for emissions tests conducted on April 6 and 7, 2000;
- Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, January 1995, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency (EPA);

- Factor Information Retrieval (FIRE 6.23) Data System, a database management system containing EPA's recommended emission estimation factors for criteria and hazardous air pollutants; and
- Guidance developed by the EPA and DEQ.

Emissions Description

The primary emissions from the Soda Springs Compressor Station are from natural gas combustion in the four reciprocating engines which drive the compressors. The criteria pollutants of concern are carbon monoxide (CO), nitrogen oxides (NO_x), and volatile organic compounds (VOCs). Natural gas combustion at this facility also results in organic compound emissions, some of which are hazardous/toxic air pollutants (HAPs/TAPs). DEQ does not expect the facility's emissions have changed compared to the previous permit term. Appendix B contains tables of estimated emissions expected from the reciprocating engines. The emissions factors used to estimate emissions are from the EPA program FIRE (SCC 20200252, for 2-stroke lean-burn (2SLB) engines) and from performance tests conducted on Units 2 and 4. The emissions estimates are used as a worst case scenario to check for rule applicability.

7. REGULATORY ANALYSIS

Facility-Wide Applicable Requirements

7.1 IDAPA 58.01.01.313.03 – Renewals of Tier I Operating Permits

This rule provides the regulatory time limits within which the owner or operator of a Tier I source is required to submit a complete Tier I operating permit application.

7.2 Fuel Burning Equipment Grain-Loading Standards – IDAPA 58.01.01.677

The definition of fuel-burning equipment given in IDAPA 58.01.01.006.41 is "Any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer." Internal-combustion reciprocating engines do not fit this definition; therefore, the reciprocating engines at the facility are not subject to the grain-loading standards for fuel-burning equipment.

7.3 PSD – IDAPA 58.01.01.205

This facility emits or has the potential to emit a regulated criteria air pollutant (NO_x) in amounts greater than 250 T/yr, the applicable PSD trigger. However, PSD permitting requirements have not been triggered because the facility was constructed (1956) prior to the effective date of the PSD permitting program (1977), no new major stationary sources have been constructed at the existing facility, and no major modifications have occurred at the existing facility.

7.4 NSPS – 40 CFR 60, IDAPA 58.01.01.590

There are no New Source Performance Standards (NSPS) that apply to the Soda Springs Compressor Station. DEQ evaluated the following NSPS sections, which are considered potentially applicable to the Soda Springs Compressor Station, and determined they do not, in fact, apply to this facility.

Standards of Performance for Storage Vessels for Petroleum Liquids (40 CFR 60 Subpart K, Ka) and Standards of Performance for Volatile Organic Liquid (Including Petroleum) Storage Vessels apply to vessels with volumes greater than 40 cubic meters (m^3), and do not apply to this facility. The permit application indicates all storage vessels at the facility used to store volatile organic liquids have a capacity less than or equal to 40 m^3 .

Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants (40 CFR 60 Subpart KKK) does not apply to the Soda Springs Compressor Station because natural gas is not processed at this station.

Standards of Performance for Onshore Natural Gas Processing: SO_2 Emissions (40 CFR 60 Subpart LLL) does not apply to the Soda Springs Compressor Station, because natural gas is not processed there.

7.5 NESHAP and MACT – 40 CFR Parts 61 and 63, IDAPA 58.01.01.591

The facility does emit or has the potential to emit a single HAP in amounts greater than 10 T/yr or a combination of HAPs in amounts greater than 25 T/yr. There are currently promulgated National Emissions Standards for Hazardous Air Pollutants (NESHAP) and/or Maximum Achievable Control Technology (MACT) rules that apply to this facility.

The National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40 CFR 63, Subpart ZZZZ) apply to the Soda Springs Compressor Station. Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major sources of HAP emissions. Affected sources at the Soda Springs Compressor Station are defined in accordance with 63.6590(a) as any existing stationary RICE with a site-rating of more than 500 brake horsepower.

On March 30, 2006, DEQ received an applicability determination worksheet completed by the facility owner. The worksheet documented the owner's understanding of the requirements of Subpart ZZZZ as they pertain to the Soda Springs Compressor Station.

There are five existing (i.e., constructed before December 19, 2002) stationary RICEs at the compressor station; four are 2SLB engines and one is an emergency generator. In accordance with 63.6595(a)(1), the owner must comply with the applicable emission limitations and operating limitations no later than June 15, 2007. Because these units are defined as existing 2SLB stationary RICEs and an existing emergency stationary RICE, in accordance with 63.6600(c), the units at the Soda Springs compressor station do not need to comply with the emission limitations or operating limitations in Subpart ZZZZ.

In accordance with 63.9, the owner of affected sources that have an initial startup before the effective date of a relevant standard under this part shall notify the Administrator in writing that the source is subject to the relevant standard as well as submitting a notification of compliance status. Therefore, the Soda Springs Compressor Station owner must submit these notifications regarding the five affected sources at the facility. The notification requirements for the Soda Springs Compressor Station are further clarified in 63.6645(d). This section states, "If you are required to submit an Initial Notification but are otherwise not affected by the requirements of this subpart, in accordance with 63.6590(b), your notification should include the information in 63.9(b)(2)(i) through (v), and a statement that your stationary RICE has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE)."

The National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR 63, Subpart DDDDD) apply to the Soda Springs Compressor Station. The boiler and fuel gas heater at the facility are defined as existing small gaseous fuel affected sources in accordance with 63.7490 and 63.7575.

In accordance with 63.7506(c)(3) and (c)(4), existing and new small gaseous fuel boilers and process heaters are not subject to the initial notification requirements in 63.9(b) and are not subject to any requirements in 40 CFR 63, Subpart DDDDD or in 40 CFR 63, Subpart A (*i.e.*, they are not subject to the emission limits, work practice standards, performance testing, monitoring, site-specific monitoring plans, recordkeeping and reporting requirements of this subpart, or any other requirements of 40 CFR 63, Subpart A).

DEQ evaluated the following NESHAPs/MACTs sections, which are considered potentially applicable to the Soda Springs Compressor Station, and determined they do not, in fact, apply to this facility.

The National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities (40 CFR 63, Subpart HH) does not apply to the Soda Springs Compressor Station, because natural gas is not produced at the facility.

The National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities (40 CFR 63, Subpart HHH) does not apply to the Soda Springs Compressor Station because, as stated in 63.1270, "A compressor station that transports natural gas prior to the point of custody transfer or to a natural gas processing plant (if present) is not considered a part of the natural gas transmission and storage source category."

7.6 CAM – 40 CFR Part 64, IDAPA 58.01.01.107.3(k)

Compliance Assurance Monitoring (CAM) does not apply to this facility, because a control device is not used to achieve compliance with any emission limitations or standards. In accordance with 40 CFR §64.1, the use of low-polluting fuel is not defined as a control device.

8. REGULATORY ANALYSIS – EMISSIONS UNITS

Clark Reciprocating Engines

8.1 Clark Reciprocating Engines Description

The natural gas compressors are powered by Dresser-Rand Clark reciprocating engines. The engines are sources of particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀), CO, NO_x, VOC, sulfur dioxide (SO₂) and some HAPs/TAPs. The units 1 through 3 compressors are each powered by Model TLA-6 engines, each of which is rated at a maximum of 1,700 hp at station conditions. Units 1 through 3 were installed when the station was constructed in 1956. Unit 4 consists of a Clark TCVA-16 reciprocating engine and compressor. The Unit 4 engine, installed in 1969 when the station was upgraded, is rated at a maximum of 6,000 hp at station conditions. The stack parameters are listed below.

Stack Parameters – Units 1 through 3

Ground Elevation:	6,140 ft
Stack Height:	25 ft
Exit diameter:	1.5 ft
Exit Gas Flowrate:	19,238 acfm
Exit Temperature:	745 °F

Stack Parameters – Unit 4

Ground Elevation:	6,140 ft
Stack Height:	40 ft
Exit diameter:	1.6 ft
Exit Gas Flowrate:	51,500 acfm
Exit Temperature:	711 °F

8.2 Facility-Wide Permit Conditions

The facility-wide permit conditions in Section 2 of the proposed Tier I operating permit are consistent with the Tier I operating permit facility-wide conditions for other facilities.

8.3 Removed Permit Conditions

Permit conditions included in the Tier I Operating Permit No. 007-00008, March 6, 2003, but removed from the renewed (proposed) permit, were not applicable requirements as defined by IDAPA 58.01.01.008.03.

Permit Conditions 2.1 and 2.5, Tier I Operating Permit No. 007-00008, March 6, 2003

The previous permit classified the reciprocating engines as fuel-burning equipment, making them subject to the grain-loading standard in IDAPA 58.01.01.677. This requirement, Permit Condition 2.1, has been dropped from the renewed permit. DEQ asserts reciprocating engines do not fit the definition of fuel-burning equipment in IDAPA 58.01.01.006.41. Fuel-burning equipment serves the primary purpose of producing heat or power by indirect heat transfer. The definition of fuel-burning equipment specifically excludes internal combustion engines because internal combustion engines do not produce heat or power through indirect heat transfer. An internal combustion engine produces mechanical power directly through the expansion of combustion gases. Internal combustion engines include reciprocating engines and combustion turbines.

Permit Condition 2.5 required the permittee to conduct periodic performance tests to determine compliance with the grain-loading standard. As stated above, the grain-loading standard does not apply to internal combustion engines. Therefore, DEQ removed Permit Condition 2.5 from the renewed permit.

Permit Condition 2.2, Permit No. T1-020058, March 6, 2003

The permittee requested Permit Condition 2.2 of Tier I Operating Permit No. 007-00008, March 6, 2003, be amended to require the permittee to record total annual fuel usage for each engine rather than record monthly fuel usage for each engine. The fuel usage data is used to calculate annual emissions for fee purposes; therefore, only annual fuel usage data is required. DEQ amended the permit condition as requested by the permittee, and the amended permit condition is now Permit Condition 3.4 in the renewed permit.

Permit Conditions 2.14 and 2.15, Permit No. T1-020058, March 6, 2003

Permit Condition 2.14 was removed because it applies to fuel burning equipment. The sources at this facility are not fuel-burning equipment; hence, the permit condition does not apply and was deleted. Permit Condition 2.15 was removed because it applies to fuel oil sulfur content. The facility is allowed to combust natural gas exclusively; hence, the permit condition does not apply and was deleted.

8.4 **Permit Requirement 4.1 – Fuel Type**

Permit Condition 4.1 has been added to the renewed permit to allow the permittee to burn only natural gas in stationary source combustion units at the Soda Springs Compressor Station. This permit condition will assure compliance with the visible emissions requirement of Permit Condition 2.7.

9. **INSIGNIFICANT ACTIVITIES**

There are several insignificant sources at the Soda Springs Compressor Station, described in the permit application. These emission units qualify as insignificant due to the quantity of emissions or to the source being specifically listed in IDAPA 58.01.01.317.01(a/b). Emission units that are listed as insignificant under IDAPA 58.01.01.317.01(b) are listed in the Tier I OP in order to be covered by the permit shield, defined in IDAPA 58.01.01.325.01, while the emission units determined insignificant under IDAPA 58.01.01.317.01(a) are not listed in the Tier I OP. While there are no monitoring requirements for insignificant emissions units at this facility, these units must comply with all applicable federal, state, and local requirements.

**Table 1. INSIGNIFICANT ACTIVITIES DESCRIBED BY THE SOURCE
IN ACCORDANCE WITH IDAPA 58.01.01.317**

Emission Unit Description	Insignificant Activities IDAPA Citation Section 317.01.
Boiler, 3.3 MMBtu/hr ¹	b.i.5
Back-up Generator, 600 hp ²	b.i.5
Warehouse heater, 70,000 Btu/hr ³	b.i.18
Shop heater, 195,000 Btu/hr	b.i.18
Fuel gas heater, 500,000 Btu/hr	b.i.18
Natural Gas Pipeline and Fuel System	b.i.30
Lubricating Oil System, 227 bbl ⁴ storage tank open to atmosphere	a.i.4

¹million British thermal units per hour

²horsepower

³British thermal units per hour

⁴barrels

The lubricating oil system produces small amounts of VOC emissions. The natural gas pipeline and fuel system produce VOC and some HAPs and TAPs emissions. These emissions result from leaking valves, flanges, pressure relief valves, and an annual testing of the emergency shutdown system that includes a facility-wide blowdown. Emissions generated from all other insignificant emissions sources are products of natural gas combustion, which include PM₁₀, SO₂, CO, NO_x, VOCs, and some HAPs and TAPs.

10. **ALTERNATIVE OPERATING SCENARIOS**

There are no alternative operating scenarios requested by the facility.

11. **TRADING SCENARIOS**

There are no trading scenarios requested by the facility.

12. COMPLIANCE SCHEDULE

12.1 Compliance Plan

NWP has submitted a compliance plan indicating that all emission units are in compliance and will continue to comply with the terms and conditions in accordance with IDAPA 58.01.01.314.10. In addition, if there are additional terms or conditions applicable to the source, NWP has stated that it will meet the terms and conditions on a timely basis as required by DEQ.

12.2 Compliance Certification

NWP is required to certify compliance each year for the period of January 1 to December 31, in accordance with General Provision 21. The facility shall submit an annual compliance certification report for each emissions unit to DEQ and EPA within 30 days of the end of the specified reporting period, in accordance with IDAPA 58.01.01.314.10. The compliance certification report shall address compliance of each emissions unit to the terms and conditions of this permit, including fuel usage, visible emissions, and fugitive emissions.

13. SEMI-ANNUAL REPORT

The permittee is required to submit semi-annual reports of any required monitoring and instances of deviations for the periods of January 1 to June 30 and July 1 to December 31 of each year. The reports are to be sent to DEQ within 30 days of the reporting period.

14. ACID RAIN PERMIT

NWP is not subject to the Acid Rain permitting requirements of 40 CFR §72-75. The facility is not an affected unit according to the definitions and applicability under 40 CFR §72.2 and §72.6. The engines at the Soda Springs Compressor Station are non-utility units as defined by 40 CFR §72.6(b)(8).

15. PERMIT REVIEW

15.1 *Regional Office Review of Draft Permit*

DEQ's Pocatello Regional Office was provided a draft permit for review and comment.

15.2 *Facility Review of Draft Permit*

The facility was provided a draft permit for review and comment.

15.3 *Public Comment and Affected States Review*

The Department of Environmental Quality (DEQ) provided the Williams Gas Pipeline, Northwest Pipeline Corp.(NWP) draft Tier I operating permit for a 30-day public comment period, as required by IDAPA 58.01.01.364, Rules for the Control of Air Pollution in Idaho, on April 21, 2006. The public comment period was provided from April 21, 2006, through May 22, 2006.

One comment was submitted in response to DEQ's draft permit. The comment pertained to a typographical error contained in Table 3.1 of the draft permit. DEQ corrected the error.

IDAPA 58.01.01.008.01 defines *affected states* as: "All states: whose air quality may be affected by the emissions of the Tier I source and that are contiguous to Idaho; or that are within 50 miles of the Tier I source."

A review of the site location information included in the permit application indicates that the facility is located within 50 miles of two state borders (Utah and Wyoming). Therefore, the states of Utah and Wyoming were provided an opportunity to comment on the draft Tier I operating permit. No comments were submitted in response to DEQ's draft permit.

15.4 EPA Review of Proposed Permit

On June 1, 2006, DEQ provided the U.S. Environmental Protection Agency (EPA) the proposed Tier I operating permit for a 45-day opportunity to object in writing to its issuance. On June 8, 2006, EPA issued a letter to DEQ indicating EPA will not be reviewing the proposed permit action and will not object to its issuance.

16. REGISTRATION FEES

This facility is a major facility as defined by IDAPA 58.01.01.008.10; therefore, registration and registration fees apply in accordance with IDAPA 58.01.01.387. The facility is in compliance with registration and registration fee requirements.

17. RECOMMENDATION

Based on the Tier I application and review of state rules and federal regulations, staff recommends that DEQ issue final Tier I operating Permit No. T1-030314 to Northwest Pipeline for its Soda Springs compressor station.

MJS/bf T1-030314

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Appendix A

**Williams Gas Pipeline, Northwest Pipeline Corp.
Soda Springs Compressor Station**

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AIRS Table

AIRS DATABASE

AIRS/AFS FACILITY-WIDE CLASSIFICATION DATA ENTRY FORM

AIR PROGRAM							
POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
SO ₂	B						U
NO _x	A	A				A	U
CO	A	A				A	U
PM ₁₀	B						U
PT (Particulate)	B						U
VOC	B						U
THAP (Total HAPs)	A				A	A	U
			APPLICABLE SUBPART				
					ZZZZ, DDDDD		

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

NA = Not applicable as defined in IDAPA 58.01.01.579, constructed prior to baseline dates.

Appendix B

**Williams Gas Pipeline, Northwest Pipeline Corp.
Soda Springs Compressor Station**

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Emissions Estimates

Criteria Pollutant Potential Emissions Estimates

Table B-1. UNIT 1 EMISSIONS

Pollutant	Emission Factor (lb/MMBtu) ¹	Control Efficiency	Maximum Potential Emissions (pounds per hour) ²	Maximum Potential Emissions (tons per year) ³	Reference
Particulate Matter	4.83E-02	0%	1.01E+00	4.4	1
PM ₁₀ ⁴	4.83E-02	0%	1.01E+00	4.4	1
Sulfur dioxide	5.88E-04	0%	1.23E-02	0.05	1
Carbon monoxide	3.86E-01	0%	8.05E+00	35.3	1
Nitrogen oxides	4.23E+00	0%	8.81E+01	385.8	2
VOC ⁵	1.20E-01	0%	2.50E+00	11.0	1
Lead	0.00E+00	0%	0	0	1

¹Pounds per million British thermal units heat input.

²Maximum potential hourly emissions based on maximum heat input of 20.85 million British thermal units per hour.

³Maximum potential annual emissions based on 8,760 hours of operation per year.

⁴Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

⁵Volatile organic compounds.

Table B-2. UNIT 2 EMISSIONS

Pollutant	Emission Factor (lb/MMBtu) ¹	Control Efficiency	Maximum Potential Emissions (pounds per hour) ²	Maximum Potential Emissions (tons per year) ³	Reference
Particulate Matter	4.83E-02	0%	1.01E+00	4.4	1
PM ₁₀ ⁴	4.83E-02	0%	1.01E+00	4.4	1
Sulfur dioxide	5.88E-04	0%	1.23E-02	0.05	1
Carbon monoxide	3.30E-01	0%	6.88E+00	30.1	2
Nitrogen oxides	4.23E+00	0%	8.81E+01	385.8	2
VOC ⁵	1.20E-01	0%	2.50E+00	11.0	1
Lead	0.00E+00	0%	0	0	1

¹Pounds per million British thermal units heat input.

²Maximum potential hourly emissions based on maximum heat input of 20.85 million British thermal units per hour.

³Maximum potential annual emissions based on 8,760 hours of operation per year.

⁴Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

⁵Volatile organic compounds.

Table B-3. UNIT 3 EMISSIONS

Pollutant	Emission Factor (lb/MMBtu) ¹	Control Efficiency	Maximum Potential Emissions (pounds per hour) ²	Maximum Potential Emissions (tons per year) ³	Reference
Particulate Matter	4.83E-02	0%	1.01E+00	4.4	1
PM ₁₀ ⁴	4.83E-02	0%	1.01E+00	4.4	1
Sulfur dioxide	5.88E-04	0%	1.23E-02	0.05	1
Carbon monoxide	3.86E-01	0%	8.05E+00	35.3	1
Nitrogen oxides	4.23E+00	0%	8.81E+01	385.8	2
VOC ⁵	1.20E-01	0%	2.50E+00	11.0	1
Lead	0.00E+00	0%	0	0	1

¹Pounds per million British thermal units heat input.

²Maximum potential hourly emissions based on maximum heat input of 20.85 million British thermal units per hour.

³Maximum potential annual emissions based on 8,760 hours of operation per year.

⁴Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

⁵Volatile organic compounds.

Table B-4. UNIT 4 EMISSIONS

Pollutant	Emission Factor (lb/MMBtu) ¹	Control Efficiency	Maximum Potential Emissions (pounds per hour) ²	Maximum Potential Emissions (tons per year) ³	Reference
Particulate Matter	4.67E-02	0%	1.60E+00	15.8	5
PM ₁₀ ⁴	4.67E-02	0%	1.60E+00	15.8	5
Sulfur dioxide	5.88E-04	0%	4.54E-02	0.20	1
Carbon monoxide	7.35E-01	0%	5.67E+01	248.3	4
Nitrogen oxides	3.35E+00	0%	2.58E+02	1,131.9	3
VOC ⁵	1.20E-01	0%	9.26E+00	40.5	1
Lead	0.00E+00	0%	0	0	1

¹Pounds per million British thermal units heat input.

²Maximum potential hourly emissions based on maximum heat input of 77.14 million British thermal units per hour.

³Maximum potential annual emissions based on 8,760 hours of operation per year.

⁴Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

⁵Volatile organic compounds.

Criteria Pollutant Potential Emissions Estimates (continued)

**Table B-4. FACILITY WIDE CRITERIA POLLUTANT
POTENTIAL EMISSIONS**

Pollutant	Maximum Potential Emissions (tons per year) ¹
Particulate Matter	29.0
PM ₁₀ ²	29.0
Sulfur dioxide	0.4
Carbon monoxide	354.2
Nitrogen oxides	2,289.3
VOC ³	73.5
Lead	0

¹Maximum potential annual emissions based on 8,760 hours of operation per year.

²Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

³Volatile organic compounds.

Hazardous Air Pollutant Potential Emissions Estimates

Table B-5. FACILITY WIDE CRITERIA POLLUTANT POTENTIAL EMISSIONS

Pollutant	Emission Factor (lb/MMBtu) ¹	Control Efficiency	Maximum Potential Emissions (pounds per hour) ²	Maximum Potential Emissions (tons per year) ³	Reference
1,1,2,2-Tetrachloroethylene	6.63E-05	0%	8.48E-03	1.11E-01	1
1,1,2-Trichloroethane	5.27E-05	0%	6.74E-03	8.85E-02	1
1,3-Butadiene	8.20E-04	0%	1.05E-01	1.38E+00	1
2,2,4-Trimethylpentane	8.46E-04	0%	1.08E-01	1.42E+00	1
2-Methylnaphthalene	2.14E-05	0%	2.74E-03	3.59E-02	1
1,3-Dichloropropene	4.38E-05	0%	5.60E-03	7.36E-02	1
Acenaphthene	1.33E-06	0%	1.70E-04	2.23E-03	1
Acenaphthylene	3.17E-06	0%	4.05E-04	5.33E-03	1
Acetaldehyde	7.76E-03	0%	9.92E-01	1.30E+01	1
Acrolein	7.78E-03	0%	9.95E-01	1.31E+01	1
Anthracene	7.18E-07	0%	9.18E-05	1.21E-03	1
Benzo(a)anthracene	3.36E-07	0%	4.30E-05	5.64E-04	1
Benzene	1.94E-03	0%	2.48E-01	3.26E+00	1
Benzo(a)pyrene	5.68E-09	0%	7.26E-07	9.54E-06	1
Benzo(b)fluoranthene	8.51E-09	0%	1.09E-06	1.43E-05	1
Benzo(e)pyrene	2.34E-08	0%	2.99E-06	3.93E-05	1
Benzo(g,h,i)perylene	2.48E-08	0%	3.17E-06	4.17E-05	1
Benzo(k)fluoranthene	4.26E-09	0%	5.45E-07	7.16E-06	1
Biphenyl	3.95E-06	0%	5.05E-04	6.64E-03	1
Carbon tetrachloride	6.07E-05	0%	7.76E-03	1.02E-01	1
Chlorobenzene	4.44E-05	0%	5.68E-03	7.46E-02	1
Chloroform	4.71E-05	0%	6.02E-03	7.91E-02	1
Chrysene	6.72E-07	0%	8.59E-05	1.13E-03	1
Ethylbenzene	1.08E-04	0%	1.38E-02	1.81E-01	1
Ethylene dibromide	7.34E-05	0%	9.38E-03	1.23E-01	1
Fluoranthene	3.61E-07	0%	4.62E-05	6.06E-04	1
Fluorene	1.69E-06	0%	2.16E-04	2.84E-03	1
Formaldehyde	5.52E-02	0%	7.06E+00	9.27E+01	1
Indeno(1,2,3-c,d)pyrene	9.93E-09	0%	1.27E-06	1.67E-05	1
Methyl alcohol	2.48E-03	0%	3.17E-01	4.17E+00	1
Methylene chloride	1.47E-04	0%	1.88E-02	2.47E-01	1
n-Hexane	4.45E-04	0%	5.69E-02	7.48E-01	1
Naphthalene	9.63E-05	0%	1.23E-02	1.62E-01	1
PAH	1.34E-04	0%	1.71E-02	2.25E-01	1
Perylene	4.97E-09	0%	6.35E-07	8.35E-06	1
Phenanthrene	3.53E-06	0%	4.51E-04	5.93E-03	1
Phenol	4.21E-05	0%	5.38E-03	7.07E-02	1
Pyrene	5.84E-07	0%	7.47E-05	9.81E-04	1

Pollutant	Emission Factor (lb/MMBtu) ¹	Control Efficiency	Maximum Potential Emissions (pounds per hour) ²	Maximum Potential Emissions (tons per year) ³	Reference
Styrene	5.48E-05	0%	7.01E-03	9.21E-02	1
Toluene	9.63E-04	0%	1.23E-01	1.62E+00	1
Vinyl chloride	2.47E-05	0%	3.16E-03	4.15E-02	1
Xylene	2.68E-04	0%	3.43E-02	4.50E-01	1
Total Potential Annual Hazardous Air Pollutant Emissions				133.6	

¹Pounds per million British thermal units heat input.

²Maximum potential hourly emissions based on maximum heat input of 16.9 million British thermal units per hour. Emissions represent potential emissions from one internal-combustion unit.

³Maximum potential annual emissions based on 8,760 hours of operation per year. Emissions represent potential emissions from all three internal-combustion units at facility.

Emissions Estimate References

1. Table 3.2-1, United States Environmental Protection Agency, AP 42, Fifth Edition, *Compilation of Air Pollutant Emission Factors, Volume 1, Stationary Point and Area Sources*.
2. April 6 and 7, 2000, performance test conducted on Unit 2 at 90 – 105% load.
3. April 6 and 7, 2000 and October 1, 2001, performance tests conducted on Unit 4 at 90 – 105% load.
4. April 6 and 7, 2000, performance test conducted on Unit 4 at < 90% load.
5. October 1, 2001, performance tests conducted on Unit 4 at 90 – 105% load.